

DelDOT's Priority Bridges

August 13, 2007

Summary and Overview of Information

In light of the bridge collapse in Minneapolis, Minnesota, DelDOT Bridge Management Section undertook a review of the inspection reports for bridges in its inventory that are high on our priority list. In addition, the staff reviewed the bridge inspection policies and procedures and determined they are up to date and are working well. Below is a summary of DelDOT's path forward. The Bridge Management Section will continue to review information as it becomes available and will take the necessary steps to ensure the safety of our bridges for the traveling public.

While we are confident that our bridges are safe and that our bridge program remains one of the very best in the nation, the DelDOT bridge staff and DelDOT's Secretary, Carolann Wicks announced the following:

- Bridge 1-585 (see below for more details) on Augustine Cutoff is receiving a complete hands-on inspection, which began August 7, 2007. Inspection frequency will be stepped up.
- Bridge 1-503 St. Anne's Church Road (see below for more details) is scheduled for a hands-on inspection the week of August 13, and inspection frequency will be stepped up.
- Bridges 1-001 Rising Sun Lane and 1-159 James Street in Newport (see below for more details) will be placed on a six-month inspection cycle.
- Bridge 1-687 Walnut Street in Wilmington (see below for more details) will be placed on a six-month inspection cycle.
- The load ratings are being reviewed and analyzed for all 20 fracture critical bridges to make sure the ratings match the inspection data.
- The 8 fracture critical bridges with a structural evaluation rating of 5 or lower (based on a scale of 1-9, with 9 being best) will be placed on a 12-month inspection cycle.
- Structurally deficient bridges will remain our top priority in our bridge program for inspection and rehabilitation.

Terminology:

- The term "structurally deficient" is simply an engineering term that, for DelDOT, means there is a component on a bridge that needs attention. Typically, **all 38 structurally deficient bridges** (only 2.7 percent of all DelDOT bridges) on this list are either being worked on now or are planned to be worked on through our normal program. Also, of the 38, 20 are simply roads over pipes/culverts, five were recently repaired or replaced, and two are under construction.
- The term "fracture critical" indicates that if one main component of a bridge of this design were to fail, the entire structure could fail. It should be noted that a fracture critical bridge may not be structurally deficient.
- The scoring (called structural evaluation in charts) you below is from 1 to 9, with 9 being defined as "superior," 8 "equal to present desirable criteria," 7 "better than present minimum criteria," 6 "equal to present minimum criteria," 5 "somewhat better than minimum adequacy to tolerate

being left in place as is,” 4 “meets minimum tolerable limits to be left in place as is,” 3 “basically intolerable requiring high priority of corrective action,” 2 “basically intolerable requiring high priority of replacement,” 1 not used in rating code, 0, “bridge closed.” Each bridge has many components that are evaluated under this score, but the overall rating is determined by the lowest of the ratings for superstructure, substructure or load capacity.

- Where underwater inspections are needed, we may supplement our resources with the Delaware State Police dive teams.

DelDOT’s bridge inventory:

	Total	Structurally Deficient	Functionally Obsolete
All Bridges	1426	38	181
NBI Bridges	832	23	126
Fracture Critical	20	4	12

Notes:

NBI (National Bridge Inventory) bridges are greater than 20' in length

All of the Fracture Critical Bridges are NBI length

The bridge inspection review process was accomplished in the following order:

1. Structurally deficient deck trusses
2. Deck trusses that are not structurally deficient
3. Structurally deficient fracture critical bridges
4. Fracture critical bridges that are not structurally deficient
5. Structurally deficient bridges of any type

1. Structurally deficient deck trusses

DelDOT does not own any structurally deficient deck trusses.

2. Deck trusses that are not structurally deficient

Bridge	Location	Structure Type	NBI	Insp Frequency	Next Insp	Str Eval
1-585	Augustine Cutoff over Brandywine Creek, Wilmington	Steel Through Truss	Y	6 months	Taking place as of 8/7/7	7

3. Structurally deficient fracture critical bridges

Bridge	Location	Structure Type	NBI	Insp Frequency	Next Insp	Str Eval	*	Construction Year
1-001	Rising Sun Lane over Brandywine Creek, N/W Wilmington	Steel Through Truss	Y	6 months	Oct. 2007	4	D	January, 2007
1-159	James Street over Christina River, Newport	Steel Bascule Lift Bridge (not operational)	Y	6 months	Sept. 2007	4	D	To be determined
1-687	Walnut Street over Christina River, Wilmington	Steel Bascule Lift Bridge	Y	6 months	Oct. 2007	4	D	Fall, 2007
1-503	St. Anne's Church Road over Norfolk Southern RR, Middletown	Steel Girder and Floor beam System	Y	6 months	Aug. 2007	4	D	FY09

NOTES: Rising Sun Lane is a historic structure in an historic district, which requires an extensive and complex approval process; James Street became structurally deficient for the first time last year; Walnut Street bridge repairs will remove the structure from the structurally deficient list.

4. Fracture critical bridges that *are not* structurally deficient:

The latest inspection reports for the following fracture critical bridges were reviewed. **There were no structural issues with the bridges.** Some of the bascule bridges had problems with the steel grid deck. The maintenance requests will be reviewed for these bridges. **The inspection frequency for these bridges will be reduced to 12 months.**

Bridge	Location	Structure Type	NBI	Insp Frequency	Next Insp	Str Eval
3-161	Poplar Street over Broad Creek, Laurel	Swing Bridge (not operational)	Y	12 months	9/18/2008	4
1-112	Yorklin Road over Red Clay Creek, Yorklyn	Pony Truss	Y	12 months	3/14/2009	5
1-119	SR 82 over Red Clay Creek, Ashland	Girder - Floorbeam System	Y	12 months	3/29/2008	5
1-577	Northeast Blvd over Brandywine Creek, Wilmington	Bascule Lift Bridge (not operational)	Y	12 months	5/7/2009	5
1-587	SR 141 over Brandywine Creek, Wilmington	Girder - Floorbeam System	Y	12 months	8/31/2008	5
2-021A	Rehoboth Blvd over Mispillion River, Milford	Bascule Lift Bridge	Y	12 months	11/7/2008	5
3-151	Front Street over Nanticoke River, Seaford	Bascule Lift Bridge	Y	12 months	11/8/2008	5
3-154	Savannah Road over Lewes Rehoboth Canal, Lewes	Bascule Lift Bridge	Y	12 months	7/26/2008	5

The latest inspection reports for the following fracture critical bridges were reviewed. These bridges are in better condition, with Structural Evaluation ratings of 6 or greater. Most of these bridges have been rehabilitated in recent years. The 24-month inspection frequencies will be maintained for these bridges.

Bridge	Location	Structure Type	NBI	Insp Frequency	Next Insp	Str Eval
1-155	Old Capital Trail over Red Clay Creek, Marshallton	Girder - Floorbeam System	Y	24 months	2/12/2009	6
1-216	Hopkins Road over White Clay Creek, Newark	Pony Truss	Y	24 months	6/5/2009	6
1-688	Markert Street over Christina River, Wilmington	Bascule Lift Bridge	Y	24 months	12/8/2008	6
1-813	I-495 over Christina River, Wilmington	Girder - Floorbeam System	Y	24 months	12/4/2008	6
3-152	Central Avenue over Broad Creek, Laurel	Bascule Lift Bridge	Y	24 months	9/18/2008	6
1-693	Northeast Blvd over Christina River, Wilmington	Bascule Lift Bridge	Y	24 months	12/7/2008	7
3-153	Rehoboth Avenue over Lewes Rehoboth Canal, Rehoboth	Bascule Lift Bridge	Y	24 months	11/8/2008	7

5. Structurally deficient bridges of any type

The latest inspection reports were reviewed for the following structurally deficient bridges. These bridges are currently in the Bridge Design program. The **Bridge Management Engineer will visually inspect the deficient elements on a monthly basis** until the bridge is repaired or replaced.

*Note: In the following charts, the column labeled * identifies bridges as follows: C = The bridge is currently under construction. D = The bridge is currently on the Bridge Design Program, R = The bridge has recently been repaired or replaced, and has not been re-inspected yet; if there is a number (1) in the * column, see below for an explanation.*

Bridge	Location	Structure Type	NBI	Insp Frequency	Next Insp	Str Eval	*	Construction Year
1-118	Barley Mill Road over Red Clay Creek, Ashland	Covered Bridge	Y	12 months	3/16/2008	4	D	Spring, 2007
1-176	Robin Court, Hockessin	CM Pipe	Y	12 months	5/11/2008	4	D	FY08
1-211A	Kirkwood Hwy over Pike Creek, Newark	Steel Girder	Y	12 months	5/4/2008	4	D	FY09
1-234	Kirkwood Hwy over Mill Creek, Newark	Steel Girder	Y	12 months	5/4/2008	5	D	FY09
2-222A	Sandy Bend Rd over Tappahanna Ditch, Maryland	P/S Concrete Girder	Y	12 months	9/12/2007	4	D	FY10
2-277A	Fox Hunters Road, W of Harrington	CM Pipe	Y	12 months	8/21/2007	4	D	FY09

The latest inspection reports were reviewed for the following structurally deficient bridges. Some of these bridges are currently in the Bridge Design program. Several bridges have been repaired and need to be re-inspected. The inspection frequency will be reduced to 12 months for bridges with a Structure Evaluation of 4 or less.

Bridge	Location	Structure Type	NBI	Insp Frequency	Next Insp	Str Eval	*	Construction Year
1-061	Glenrock Drive, N of Wilmington	Steel Girder	N	24 months	4/3/2008	4	R	N/A
1-100	Old Kennett Road, Centerville	Concrete Culvert	N	12 months	3/8/2008	4	D	FY10
1-110	Pyles Ford Road, N of Wilmington	Concrete Culvert	N	12 months	3/1/2008	3	D	FY09
1-133	Breidablik Drive, Breidablik	CM Pipe	N	12 months	3/21/2008	4	1	To be determined
1-325	Otts Chapel Road, Newark	CM Pipe	N	24 months	5/22/2008	4	D	FY10
1-330	Marrows Road, Newark	CM Arch	N	24 months	5/3/2008	4	D	FY10
1-335	Old Cooches Bridge Rd, Newark (closed)	Timber	Y	24 months	3/13/2008	0	2	N/A
1-394N	US 13 over Drawyers Creek, Odessa	P/S Concrete Girder	Y	24 months	4/25/2009	4	D	FY11
1-536	Guyencourt Road, N of Wilmington	Concrete Culvert	N	24 months	4/4/2008	4	D	FY11
1-609B	6th Street over CSX, Wilmington	Steel Girder	Y	12 months	7/8/2008	3	C	FY07
1-609C	7th Street over CSX, Wilmington	Steel Girder	Y	12 months	7/8/2008	2	C	FY07
1-652	Kiamensi Road, Newport	CM Pipe	N	12 months	2/27/2008	4	D	FY10
1-711	Salem Church Road over I-95, Newark	Steel Girder	Y	24 months	12/5/2007	4	R	N/A
1-744	I-95 over Christina River, Wilmington	Steel Girder	Y	24 months	3/28/2008	4	3	Spring 2008
2-040A	School Lane, Clayton	CM Pipe	Y	24 months	7/25/2008	5	4	To be determined
2-062C	Nine Foot Road	CM Pipe	N	12 months	8/29/2007	4	5	To be determined
2-203A	Todds Mill Road	Concrete Slab	Y	12 months	12/27/2007	4	6	To be determined
2-254A	Mt Olive Cemetary Road	CM Pipe	Y	12 months	9/6/2007	4	D	FY10
2-292A	Bullock Road, W of Harrington	CM Pipe	N	12 months	8/23/2007	4	R	FY07
2-296A	Layton Corners Road, W of Harrington	CM Pipe	Y	12 months	8/9/2007	4	D	FY10
2-307A	Gallo Road, W of Harrington	Timber	Y	24 months	8/7/2007	0	R	FY07
2-455D	Fox Hunters Road, W of Harrington	CM Pipe	N	12 months	10/15/2007	4	R	FY07
3-156	SR 1 over Indian River Inlet	Steel Girder	Y	6 months	Sept. 2007	4	D	FY09
3-405	Baker Road, W of Selbyville	CM Pipe	N	6 months	12/7/2007	3	D	FY10
3-408	Pepper Road, N of Selbyville	CM Pipe	Y	24 months	6/14/2008	4	D	FY10
3-434	Roxana Road, NE of Selbyville	CM Pipe	N	12 months	6/29/2008	4	D	FY10
3-462	Bear Hole Road, E of Selbyville	CM Pipe	Y	12 months	8/16/2007	4	D	FY10
3-925	Lighthouse Road, N of Slaughter Beach	Timber	N	24 months	9/2/2008	4	D	FY10

1. Breidablik Drive was part of a subdivision street recently turned over to the state for maintenance, and its deficiency is that the pipe has corrosion.
2. Old Cooches Bridge is on a roadway no longer open to traffic, and therefore not used.
3. Recent changes in structural rating put this on the list.
4. Pipe has corrosion.
5. Pipe has corrosion.

6. To be included in upcoming design program.